

## Development of a Learning Environment based on Spatio-temporal Historical Story Mapping Animation

INOUE, Yasushi<sup>1\*</sup> ; TSURUOKA, Ken'ichi<sup>1</sup> ; ARIKAWA, Masatoshi<sup>1</sup>

<sup>1</sup>Center for Spatial Information Science, The University of Tokyo

The purpose of leaning history is to have the capability of imaging the future by using the knowledge in historical facts. In history learning, it is important for users to understand effectively causal relationships of events. However, paper textbooks have a limitation of dynamically representing historical stories, because articles of paper textbooks consist of pieces of texts and pictures such as photos, maps, diagrams, and chorological tables. These kinds of articles are fragmental and static descriptions from the viewpoint of visual presentations. A learning environment that the user can easily understand causal relationships of events for a historical story is desired.

For resolving the limitation of paper textbooks, we propose a new framework for visualization of historical stories with relationships of events. A historical story can be defined what to combine causal relationships of events along the axis of time. We classified and defined simple data models for visualization according as time series and locations of events. We have implemented an application software system that has an interactive user interface by displaying sequences of graphics with our data models. Visual representation of our user interface is realized by three basic methods for depicting historical stories as follows:

- (1)Visualization of causal relationships with arrow icons on chorological tables and maps
- (2)Visualization of hierarchies of events with chorological tables and maps
- (3)Visualization of the focal position in storytelling

We are creating animation content telling the story about the government's actions for the aftermath of the 2011 Tohoku earthquake and tsunami by using our prototype system as a model case. The purpose of our study is to realize a learning environment for users to easily understand causal relationships of events, in brief, and to prove effectiveness of historical learning through the model case.

Keywords: History Learning, Visualization, Ubiquitous Mapping